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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,730	02/02/2004	Tomohiro Murakami	5000-5142	1015

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EXAMINER	
DWIVEDI, VIKANSHA S	

ART UNIT	PAPER NUMBER
3746	

NOTIFICATION DATE	DELIVERY MODE
05/20/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/770,730	MURAKAMI ET AL.	
	Examiner	Art Unit	
	VIKANSHA S. DWIVEDI	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8 and 10-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

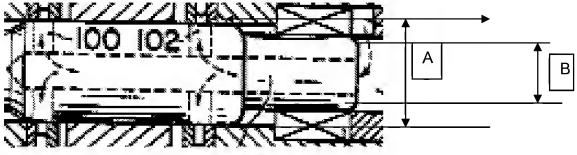
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 12-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Degawa et al. (U.S. Patent number 4,321,019).

Degawa discloses a compressor with a lubrication structure, comprising: a rotary shaft (20, figure 1); a piston (not shown but clearly inherent, Col. 2 ll. 15-25); a driving body accommodating chamber (not numbered but clearly shown in figure 1); a driving body accommodated in the driving body accommodating chamber (figure 1), wherein the driving body converts rotation of the rotary shaft into reciprocation of the piston, thereby causing the piston to compress gas (figure 1); a gas passage (shown by 44, 92, 94, 100 and 102 etc. in figure 1) that extends through the rotary shaft and communicates with the driving body accommodating chamber so that gas in the driving body accommodating chamber flows into the gas passage, wherein the gas passage includes an expansion portion (in space around 42 of figure 1); and a fluid passage formed in the rotary shaft to open to the expansion portion and the driving body accommodation chamber (32, 43 figure 1), wherein the maximum cross-sectional area of the expansion portion is greater than the maximum cross-sectional area of a section of the gas passage

that is upstream of the expansion portion with regard to gas flow in the gas passage (A > B, as shown below in section taken from figure 1 of Degawa);



Section of figure 1 from Degawa et al.

Wherein the fluid passage extends in a radial direction with respect to an axis of the rotary shaft (Figure 1); wherein the expansion portion has an upstream end (end of section corresponding to A) and a downstream end (end of section corresponding to B) with regard to gas flow, and the cross-sectional of the expansion portion gradually increases from the upstream end towards the downstream end (see where the two cross-sections meet in figure 1, there is not an abrupt increase rather there is a gradual increase); the compressor further comprising: a discharge pressure zone, the internal pressure of which is discharge pressure; a suction pressure zone, the internal pressure of which is suction pressure; a feed passage connecting the discharge pressure zone with the driving body accommodating chamber (Figure 1); and a bleed passage connecting the driving body accommodating chamber with the suction pressure zone (figure 1), wherein the bleed passage functions as the gas passage, wherein the pressure in the driving body accommodating chamber is adjusted by

supplying gas in the discharge pressure zone to the driving body accommodating chamber through the feed passage (Figure 1), and bleeding gas in the driving body accommodating chamber to the suction pressure zone through the bleed passage, and wherein a displacement of the compressor is controlled according to the pressure in the driving body accommodating chamber; wherein the gas is a refrigerant containing lubricating oil (abstract).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-8, 10-11 and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Degawa et al. (U.S. Patent number 4,321,019) in view of Tarutani et al. (U.S. Patent 6,675,607) and in further view of Fuji et al (U.S. Patent 5,419,685).

Regarding Claim 5 Degawa reference does not teach a compressor comprising a plurality of cylinder bores arranged around an axis of the rotary shaft, the Tarutani et al. reference teaches a compressor comprising a plurality of cylinder bores arranged around an axis of the rotary shaft, " wherein the piston is one of a plurality of pistons each of which is accommodated in one of the cylinder bores, each piston defining a compression chamber in the associated cylinder bore,

wherein the compressor further comprises a rotary valve (Column 3, Lines 18-27 and Column 4, Line 13).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the compressor as taught by Degawa to form a compressor comprising a plurality of cylinder bores arranged around an axis of the rotary shaft to provide better compression efficiency (Summary of invention). Although Degawa in view of Tarutani et al. reference does not explicitly teach the expansion portion of a feed passage communicating with the supply passage through a restriction passage; however, it does state that the location of the expansion passage need not be limited with respect to the restriction passage (Column 6, Line 61-63). Since the locations of the restriction and expansion passages are not limited with respect to each other, it is apparent from Figures 1 and 3-6 of the Tarutani et al. reference that the expansion portion may communicate with the supply passage through a restriction passage. The Tarutani et al reference does not teach a compressor comprising a rotary valve that has an inlet passage for drawing gas from the suction pressure zone to the compression chambers, wherein the rotary valve includes a supply passage connecting the inlet passage with the suction pressure zone, and wherein the expansion portion communicates with the supply passage through a restriction passage. The Fuji et al. reference teaches a compressor having a rotary valve with inlet and suction passageways connecting the suction pressure zone with the compression chambers (Column 9, Lines 29-34, 68-69 and Column 10, Lines 1-4). At the time the invention was made, it would have been obvious to one of

ordinary skill in the art to modify the compressor as taught by Degawa to use the rotary valve as taught by the Tarutani et al. reference and modify it according to the teachings of the Fuji et al. reference to include the inlet and suction passages connecting the suction zone with the compression chambers and to provide a high volumetric efficiency in the compression of the refrigerant gas (Summary of invention).

Regarding Claims 6-8 10 and 11, Degawa does not teach a reference teaches a rotary valve that is coupled to the rotary shaft to integrally rotate with the rotating shaft. Tarutani et al. reference teaches a rotary valve that is coupled to the rotary shaft to integrally rotate with the rotating shaft (Column 4, Lines 12-15). From Figure 1 of the Tarutani et al. reference, it is apparent that the restriction passage is located in the rotary valve. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the compressor as taught by Degawa to form a rotary valve that is coupled to the rotary shaft to integrally rotate with the rotating shaft to provide better compression efficiency (Summary of invention). Although Degawa in view of Tarutani et al. reference does not explicitly disclose a shutter having the restriction passage in the rotary shaft, it is apparent that the restriction passage defined by the Tarutani et al. reference (#38 in Figure 1) and the shutter disclosed by the present invention serve the same purpose of restricting the flow of the refrigerant. The restriction passage of the Tarutani et al. reference may be construed as a shutter without deviating from the scope of the invention. The restriction passage and the supply passage of the Tarutani et al. reference

function as a bleed passage, providing fluid communication between the intake chamber and the swash plate chamber. The restriction passage of the Tarutani et al. reference is formed in the center portion of the rotary valve, which is located on the axis of the rotating shaft (Column 4, Lines 12-18). Although the Tarutani et al. reference does not teach a rotary valve with an inlet and suction passages, at the time the invention was made, it would be obvious to one of ordinary skill in the art to combine the teachings of the Degawa and Tarutani et al. reference with the rotary valve disclosed by the Fuji et al. reference. This combination would not change the scope of the invention, and would function in essentially the same way as the present invention and to provide a high volumetric efficiency in the compression of the refrigerant gas (Summary of invention).

Regarding Claim 16, Degawa does not teach a compressor comprising a plurality of cylinder bores arranged around an axis of the rotary shaft, wherein the piston is one of a plurality of pistons each of which is accommodated in one of the cylinder bores, each piston defining a compression chamber in the associated cylinder bore, wherein the compressor further comprises a rotary valve. Tarutani et al. reference teaches a compressor comprising a plurality of cylinder bores arranged around an axis of the rotary shaft, wherein the piston is one of a plurality of pistons each of which is accommodated in one of the cylinder bores, each piston defining a compression chamber in the associated cylinder bore, wherein the compressor further comprises a rotary valve (Column 3, Lines 18-27 and Column 4, Line 13). At the time the invention was made, it would have

been obvious to one of ordinary skill in the art to modify the compressor as taught by Degawa to form a compressor taught by Degawa to provide better compression efficiency (Summary of invention). Although Degawa in view of Tarutani et al. reference does not explicitly teach the expansion portion of a feed passage communicating with the supply passage through a restriction passage; however, it does state that the location of the expansion passage need not be limited with respect to the restriction passage (Column 6, Line 61-63). Since the locations of the restriction and expansion passages are not limited with respect to each other, it is apparent from Figures 1 and 3-6 of the Tarutani et al. reference that the expansion portion may communicate with the supply passage through a restriction passage. The Tarutani et al reference does not teach a compressor comprising a rotary valve that has an inlet passage for drawing gas from the suction pressure zone to the compression chambers, wherein the rotary valve includes a supply passage connecting the inlet passage with the suction pressure zone, and wherein the expansion portion communicates with the supply passage through a restriction passage. The Fuji et al. reference teaches a compressor having a rotary valve with inlet and suction passageways connecting the suction pressure zone with the compression chambers (Column 9, Lines 29-34, 68-69 and Column 10, Lines 1-4). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use the rotary valve as taught by Degawa and Tarutani et al. reference and modify it according to the teachings of the Fuji eta/. reference to include the inlet and suction passages connecting the suction zone with the compression chambers and to provide a

high volumetric efficiency in the compression of the refrigerant gas (Summary of invention).

Regarding Claims 17 and 18, Degawa reference does not teach a rotary valve that is coupled to the rotary shaft to integrally rotate with the rotating shaft Tarutani et al. reference teaches a rotary valve that is coupled to the rotary shaft to integrally rotate with the rotating shaft (Column 4, Lines 12-15). Additionally, it is apparent from Figure 1 that the restriction passage (38) is located inside the rotary valve (37). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the compressor as taught by Degawa to form a compressor taught by Degawa to provide better compression efficiency (Summary of invention). Although Degawa in view of Tarutani et al. reference does not explicitly disclose a rotary valve with both inlet and suction passages; however, as previously noted, the Fuji et al. reference does contain those elements. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the Degawa and Tarutani et al. compressor with the rotary valve disclosed by Fuji et al. Rotary valves are commonly utilized in the art of swash-plate compressors, and modifying the Tarutani et al. compressor to include Fuji's rotary valve would not deviate from the intended scope of the invention.

Regarding Claims 8 and 19, Degawa does not teach a compressor wherein the rotary shaft has one end at which the expansion portion opens, and the rotary valve has one end at which the restriction passage opens, and wherein

the one end of the rotary valve is fitted to the one end of the rotary shaft. Tarutani reference teaches a compressor wherein the rotary shaft has one end at which the expansion portion opens, and the rotary valve has one end at which the restriction passage opens, and wherein the one end of the rotary valve is fitted to the one end of the rotary shaft. As is apparent from Figure 1, the restriction passage (38) opens to the area 38a, and expansion passage (39) is in communication with passage 41. As previously stated, the rotary valve and the rotating shaft are coupled together (Column 4, Lines 12-16). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the compressor as taught by Degawa to form a compressor taught by Degawa to provide better compression efficiency (Summary of invention). Degawa in view of Tarutani et al. reference does not disclose a rotary valve with both inlet and suction passages; however, as previously noted, the Fuji et al. reference does contain those elements. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the Degawa and Tarutani et al. compressor with the rotary valve disclosed by Fuji et al. to provide a high volumetric efficiency in the compression of the refrigerant gas (Summary of invention).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VIKANSHA S. DWIVEDI whose telephone number is (571)272-7834. The examiner can normally be reached on M-F, 8-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art Unit 3746

VSD